# RECEIVER SPATIAL PROCESSING FOR EIGENMODE TRANSMISSION IN A MIMO SYSTEM

## ABSTRACT

For eigenmode transmission with minimum mean square error (MMSE) receiver spatial processing, a transmitter performs spatial processing on $N_S$ data symbol streams with steering vectors to transmit the streams on $N_S$ spatial channels of a MIMO channel. The steering vectors are estimates of transmitter steering vectors required to orthogonalize the spatial channels. A receiver derives a spatial filter based on an MMSE criterion and with an estimate of the MIMO channel response and the steering vectors. The receiver (1) obtains $N_R$ received symbol streams from $N_R$ receive antennas, (2) performs spatial processing on the received symbol streams with the spatial filter to obtain $N_S$ filtered symbol streams, (3) performs signal scaling on the filtered symbol streams with a scaling matrix to obtain $N_S$ recovered symbol streams, and (4) processes the $N_S$ recovered symbol streams to obtain $N_S$ decoded data streams for the $N_S$ data streams sent by the transmitter.